Teaching the science behind agriculture

“Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous and they are tied to their country and wedded to its liberty and interests by the most lasting bands.” (Thomas Jefferson, 1785)

Many of you may be able to personally identify with this quote from Mr. Jefferson, due to the fact that we live in a rural, predominately agricultural area. However, our urban counterparts may be several generations removed from any form of production agriculture and do not understand the science behind the production of their food.

Even many of our youth, who will soon be the leaders and scientists of tomorrow, are losing sight of where food comes from and how it’s produced.

Colorado State University Extension agents and specialists recognized this concerning trend and created a program called AgFest in 2010. AgFest is an innovative, eclectic approach to help fifth- and sixth-grade students explore science, technology, engineering and math (STEM) through hands-on educational workshops that supplement their school curriculum.

In order to deliver AgFest to a large audience of fifth- and sixth-grade students, the program travels to communities across eastern Colorado. In the spring of 2011, the second year of AgFest, approximately 1,200 students from over 20 schools attended one of five AgFest events held at fairgrounds and community centers.

During the day-long program, students rotate through 10 activity stations, typically in groups of 15-30 students. The following stations for the 2012 AgFest event will focus on different science-based learning objectives related to these aspects of agriculture:

—dairy production.

—global positioning satellites.

—embryology.

—microbes and bacteria (bio-security).

—groundwater quality.

—ruminant digestion.

—plant science and biotechnology.

—pollination—honey bees.

—power and simple tools.

—rangeland ecology.

Stations also feature hands-on learning activities that make challenging science concepts easier to grasp. Twenty-three CSU Extension agents and specialists lead students through activities and lessons designed to supplement classroom curriculum.

For example, at the power and simple tools station, students experiment with pulleys and levers to learn about lifting loads and multiplying force. Students are also introduced to a cow's four-chambered stomach, good verses bad bacteria, baby chick embryos, the process of making butter, precision farming using GPS units and energy technology.

The impacts of AgFest are numerous. In just two short years, AgFest continues to develop a scientific understanding of food production among students who attend the one-day event.

Pre- and post-survey results indicate students greatly increased their understanding of scientific and agricultural concepts. According to the 2011 results, the greatest gains were related to embryology, microbes, rangeland and plants.

One particularly fascinating component to the post-survey is space for AgFest participants to write down and sketch the most interesting thing they learned during the AgFest event. Students provided detailed descriptions of the parts of an egg, levers and pulleys, "gross" germs and the "amazing" four-chambered cow stomach.

Most students expressed their enthusiasm for AgFest and indicated a willingness to return because the learning was so much fun.

As AgFest evolves, the planning committee hopes to further develop station activities to give students even more engaging, innovative, hands-on learning opportunities that develop their understanding of the agricultural, natural, physical and life sciences while increasing their awareness and knowledge of agriculture and food production.

The following quote from a fifth-grade student sums up the AgFest experience for the participants. "Thank you for teaching us about everyday things. The embryology, honey bees and simple machines were my favorite stations. I hope that you keep this going so other kids can learn and have fun."

If you have any questions about AgFest, or any of the 4-H programs offered by CSU Extension, please call the Phillips County Extension Office at 970-254-3616.

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